

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: CEN10FA382		Aircraft Registration Number: N88DF	
		Occurrence Date: 07/10/2010		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Tulsa	State OK	Zip Code 74115	Local Time 2205	Time Zone CDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility: 1			
Aircraft Information Summary					
Aircraft Manufacturer CESSNA		Model/Series 421/A		Type of Aircraft Airplane	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident: *** Note: NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report. *** HISTORY OF FLIGHT On July, 10, 2010, at 2205 central daylight time (CDT), a Cessna model 421/A airplane, N88DF, impacted trees and terrain following a dual loss of engine power during a visual approach to the Tulsa International Airport (TUL), Tulsa, Oklahoma. The private pilot and two pilot rated passengers were fatally injured. The airplane was owned and operated by the pilot, and the business flight was being conducted under the provisions of Title 14 Code of Federal Regulations Part 91 without a flight plan. The cross-country flight originated at the Oakland County International Airport (PTK), Pontiac, Michigan, and the intended destination was the Richard Lloyd Jones Jr. Airport (RVS), Tulsa, Oklahoma. The airplane had requested to land at TUL prior to the accident. Visual meteorological conditions prevailed at the time of the accident. The pilot and both passengers departed RVS for PTK about 0919 and arrived at PTK about 1251 for a business meeting. The airplane flew at 13,500 feet mean sea level (msl), resulting in a three hour and thirty-two minute flight. Prior to departing PTK the pilot requested the fixed base operator to "top it off, but nothing in the nacelles," and the plane was subsequently serviced with 156 gallons of 100 octane low lead (100LL) aviation fuel. A line serviceman for the fixed base operator providing the fuel observed the pilot performing a preflight inspection prior to departing PTK. During the preflight the lineman observed the right main tank sump become stuck open. He estimated that five to six gallons of fuel was lost before the sump seal was regained, but the exact amount of fuel lost could not be determined. The pilot was heard to say "Great, that's the side that burns more fuel." The fuel lost as a result of the fuel spill was not replaced. The airplane departed PTK for RVS about 1803 and flew the return flight at 4,500 feet msl. At 2147:53 the pilot checked in with Tulsa Approach Control and was cleared direct RVS. At 2157:50 the pilot stated he'd like to land at TUL and was given direction to enter a left base to Runway 18 Right (18R). At 2201:44 the pilot was told to switch to the local tower control frequency, which he did at 2201:47. The pilot was given clearance to land at 2201:56. At 2204:23 the pilot stated /*o\215Tulsa, we've exhausted our fuel." The airplane was observed descending into a forested area, followed by a flash. The pilot did not inform either of the approach or tower controllers he had a fuel problem at any time prior to reporting the fuel exhaustion. PILOT INFORMATION The pilot, age 51, held a private pilot certificate with ratings of airplane single-engine land, and airplane multi-engine land. His last biennial flight review was on November 3, 2009, and his					
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Narrative (Continued)

last third class medical certificate was issued on December 22, 2009. The pilot's logbook indicated he had accumulated about 592 total flight hours, and about 67 hours in the accident airplane at the time of the accident.

PASSENGER INFORMATION

The front-seat passenger, age 43, held a private pilot certificate with a rating of airplane single engine land. His last FAA third-class medical certificate was issued on November 21, 2001, with no limitations.

No pilot's logbook was located for the pilot-rated passenger. According to his last FAA application for medical certification, November 21, 2001, he indicated 140 total hours and 15 hours in the last six months.

AIRCRAFT INFORMATION

The airplane was a twin engine, low wing aircraft, serial number 421A0084. It was powered by two Continental GTSIO-520-D engines driving McCauley three-blade propellers. The last regularly occurring airframe inspection was an annual type on November 20, 2009, at a Hobbs time of 576.3 hours. An annual type inspection was also performed on each engine on November 20, 2009.

The airplane was configured with an eight tank fuel system. It included left and right main tanks (50 gallons usable fuel each wing), left and right auxiliary fuel tanks (35 gallons usable fuel each wing), optional auxiliary fuel tanks (13 gallons usable fuel each wing), and optional wing locker tanks (26 gallons usable fuel each wing). The left wing locker tank was placarded "INOP", and the right wing locker tank was not used. This provided for a capacity of 196 gallons of usable fuel for the accident flight.

METEOROLOGICAL INFORMATION

Weather at TUL at 2153 was reported as 10 miles visibility, skies clear, and temperature 75 degrees Fahrenheit. Winds were calm.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted trees and terrain about ½ mile north of TUL on the extended centerline of Runway 18R in Mohawk Park, property operated by the city of Tulsa, Oklahoma. The aircraft struck 50 to 60 foot tall trees on an approximate 180 degree magnetic heading. The debris field was approximately 200 feet long and 75 feet wide. The right main fuel tank was impact damaged, separated from the wing, and found near the base of the first tree strike. The fuselage came to rest inverted 200' to the south of the first tree strike.

The wings remained attached to the fuselage. The empennage was separated from the tailcone approximately 3 feet forward of the horizontal stabilizer leading edge. The engines remained attached to the wing by fragmented engine mount structure, control cables, hoses, wiring, and tubing. The left main gear was separated from the wings. The nose of the aircraft separated at the forward pressure bulkhead. A post-impact fire damaged the right wing, right engine cowling, right locker and locker tank structure.

The right locker fuel tank was breached at the impact site and did not contain fuel. The left locker tank was placarded as "INOP" and not fueled for the flight. It was not breached and did not contain fuel. The main tanks were fragmented and separated from the wings due to tree impact. The outboard 13 gallon bladder style auxiliary tanks were breached by tree impact. No fuel contamination signatures were observed in the trees or ground vegetation in the wreckage path or debris field. The left outboard auxiliary tank did not contain fuel; and the right outboard

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auxiliary tank burned. The left inboard 35 gallon auxiliary tank was intact and did not contain fuel. The right inboard 35 gallon auxiliary tank was burned. It could not be determined if had been breached before the post-impact fire destroyed it.

The right propeller was found separated from the engine at the accident site. The blades remained secured in the propeller hub in the feathered position. One blade was unremarkable. The two other blades were bent aft approximately 15 degrees in small radius bends starting approximately 10 inches from the hub. No leading edge impact damage or signatures indicative of rotation were noted to the right propeller.

The left propeller remained attached to the left engine. All blades remained secured in the propeller hub in the feathered position. None of the blades on the left propeller displayed leading edge impact or rotational signatures.

The left engine was examined and continuity was verified by rotating the propeller flange by hand. Suction and compression were also verified at each cylinder. Cylinder numbers 1, 3, 5, 4, and 6 rocker arms exhibited continuity when the crankshaft was partially rotated by hand at the crankshaft flange. Cylinder no. 2 push rods exhibited damage. Both left and right magnetos were inspected for internal foreign object debris, which none was detected. Both left and right magneto breaker cover vents were clear of obstructions. Both left and right magneto drive shafts rotated freely when turned by hand. A cotter pin was observed on the magneto drive shafts, which were intact. A blue spark was observed at all ignition leads when the magneto drive shafts were turned by hand. No anomalies were noted with the left engine that would have prevented normal operation.

The right engine was examined and continuity was verified by rotating the propeller flange by hand. Suction and compression were verified at each cylinder and all cylinder rocker arms exhibited continuity when the crankshaft was partially rotated by hand at the crankshaft flange. Cylinder no. 2 push rods exhibited damage. Both left and right magnetos were inspected for internal foreign object debris, which none was detected. Both left and right magneto breaker cover vents were clear of obstructions. Both left and right magneto drive shafts rotated freely when turned by hand. A cotter pin was observed on the magneto drive shafts, which were intact. A blue spark was observed at all ignition leads when the magneto drive shafts were turned by hand. No anomalies were noted with the right engine that would have prevented normal operation.

TESTS AND RESEARCH

A Garmin GPSMAP 696 portable Global Positioning System (GPS) unit was recovered from the accident scene and sent to the NTSB recorder's laboratory for download. The data for the accident flight was recovered. The recovered data showed the airplane flew a mostly straight flight from PTK towards RVS at about 4,500 feet mean sea level until the pilot requested to land at TUL. The data after 2150 was consistent with the airplane maneuvering from northeast of TUL to land on runway 18R at TUL. The flight path also depicted the airplane flying a minimum of one mile further distance to reach Runway 18R than if the airplane had proceeded directly to Runway 18L at TUL when the pilot first requested to divert to TUL when the airplane was northeast of TUL.

Two Electronic International UBG-16 panel mounted gauges, one for each installed engine, were sent to the NTSB vehicles recorder laboratory to attempt to recover flight data from the accident flight. It was determined these devices did not have the capability to retain data, and therefore did not contain recorded data from the accident flight.

One Shadin Avionics Digiflo-L™ fuel flow indicator was sent to the NTSB vehicles recorder laboratory to attempt to recover flight data from the accident flight. The Digiflo-L™ contains non-volatile memory that retains setup information, fuel remaining and fuel used information, if power is removed from the unit. Data was recovered from the unit that indicated for the accident flight the Full Fuel setting was 196 gallons, Fuel Used was 170.8 gallons, and fuel remaining

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(based on the manually set Full Fuel setting) was 25.1 gallons.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Chief Medical Investigator, Board of Medicolegal Investigations, located in Oklahoma City, Oklahoma, performed an autopsy on the pilot on July 11, 2010. The cause of death was attributed to internal injuries due to blunt force trauma.

The FAA, Toxicology Accident Research Laboratory, located in Oklahoma City, Oklahoma, conducted toxicological testing on the pilot. Testing for carbon monoxide and cyanide were negative. The following Volatiles and Drugs were detected:

- 22 (ug/ml, ug/g) acetomenophine detected in urine
- 0.082 Cyclobenzaprine detected in blood
- Cyclobenzaprine detected in urine
- 0.07 (ug/ml, ug/g) Diphenhydramine detected in blood
- Diphenhydramine detected in urine
- Ibuprofen detected in urine
- 0.291 (ug/ml, ug/g) Phentermine detected in blood
- Phentermine detected in urine

Cyclobenzaprine is a prescription tricyclic muscle relaxant and carries this warning: "Warnings - may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)." Diphenhydramine, also known by the trade name Benadryl, is a sedating antihistamine available over the counter; and it is also the active ingredient in most over the counter sleep aids. It carries the identical warning and is known to impair the performance of drivers at routine doses. Phentermine is a medication that reduces hunger and is used as an aid to weight loss, but is chemically a stimulant similar to amphetamine. Phentermine is not a medication approved for use among pilots by the Federal Aviation Administration.

The Office of the Chief Medical Investigator, Board of Medicolegal Investigations, located in Oklahoma City, Oklahoma, performed an autopsy on the pilot-rated passenger on July 12, 2010. The cause of death was attributed to internal injuries due to blunt force trauma.

The FAA, Toxicology Accident Research Laboratory, located in Oklahoma City, Oklahoma, conducted toxicological testing on the pilot-rated passenger. Testing for carbon monoxide and cyanide were negative. The following Volatiles and Drugs were detected:

- Dextrophan detected in urine
- Dextrophan not detected in blood

According to the NTSB Medical Officer, Dextrophan is a component in many over-the-counter cough medicines and is not considered impairing.

Updated on May 30 2013 4:48PM

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Landing Facility/Approach Information						
Airport Name Tulsa International Airport		Airport ID: TUL	Airport Elevation 677 Ft. MSL	Runway Used 18R	Runway Length 6101	Runway Width 150
Runway Surface Type: Not Applicable						
Runway Surface Condition: Dry						
Approach/Arrival Flown: Visual						
VFR Approach/Landing: Straight-in						
Aircraft Information						
Aircraft Manufacturer CESSNA		Model/Series 421/A		Serial Number 421A0084		
Airworthiness Certificate(s): Normal						
Landing Gear Type: Retractable - Tricycle						
Amateur Built Acft? No		Number of Seats: 6		Certified Max Gross Wt. 7450 LBS	Number of Engines: 2	
Engine Type: Reciprocating		Engine Manufacturer: CONTINENTAL		Model/Series: GTSIO520	Rated Power:	
- Aircraft Inspection Information						
Type of Last Inspection Annual		Date of Last Inspection 11/2009	Time Since Last Inspection Hours		Airframe Total Time 640 Hours	
- Emergency Locator Transmitter (ELT) Information						
ELT Installed?/Type Yes /		ELT Operated? Yes		ELT Aided in Locating Accident Site? No		
Owner/Operator Information						
Registered Aircraft Owner Chase R. Bales		Street Address 200 E. 171st Street				
		City Glenpool		State OK	Zip Code 74033	
Operator of Aircraft Chase R. Bales		Street Address 200 E. 171st Street				
		City Glenpool		State OK	Zip Code 74033	
Operator Does Business As:				Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None						
Air Carrier Operating Certificate(s):						
Operating Certificate:			Operator Certificate:			
Regulation Flight Conducted Under: Part 91: General Aviation						
Type of Flight Operation Conducted: Business						
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First Pilot Information																																																																																															
Name		City		State	Date of Birth																																																																																										
On File		On File		On File	On File																																																																																										
Age	51																																																																																														
Sex: M	Seat Occupied:	Occupational Pilot? No		Certificate Number: On File																																																																																											
Certificate(s): Private																																																																																															
Airplane Rating(s): Multi-engine Land; Single-engine Land																																																																																															
Rotorcraft/Glider/LTA: None																																																																																															
Instrument Rating(s): None																																																																																															
Instructor Rating(s): None																																																																																															
Current Biennial Flight Review? 11/2009																																																																																															
Medical Cert.: Class 3		Medical Cert. Status: With Waivers/Limitations		Date of Last Medical Exam: 12/2009																																																																																											
<table border="1"> <tr> <th rowspan="2">- Flight Time Matrix</th> <th rowspan="2">All A/C</th> <th rowspan="2">This Make and Model</th> <th rowspan="2">Airplane Single Engine</th> <th rowspan="2">Airplane Multi-Engine</th> <th rowspan="2">Night</th> <th colspan="2">Instrument</th> <th rowspan="2">Rotorcraft</th> <th rowspan="2">Glider</th> <th rowspan="2">Lighter Than Air</th> </tr> <tr> <th>Actual</th> <th>Simulated</th> </tr> <tr> <td>Total Time</td> <td>592</td> <td>67</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instruction Received</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air	Actual	Simulated	Total Time	592	67									Pilot In Command(PIC)											Instructor											Instruction Received											Last 90 Days											Last 30 Days											Last 24 Hours										
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Seatbelt Used? Yes		Shoulder Harness Used? No		Toxicology Performed? Yes																																																																																											
				Second Pilot? Yes																																																																																											
Flight Plan/Itinerary																																																																																															
Type of Flight Plan Filed: None																																																																																															
Departure Point		State	Airport Identifier	Departure Time	Time Zone																																																																																										
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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
TUL	2153	CDT	677 Ft. MSL	1 NM	180 Deg. Mag.
Sky/Lowest Cloud Condition: Clear				Ft. AGL	Condition of Light: Night
Lowest Ceiling: None			Ft. AGL	Visibility: 10 SM	Altimeter: 29.89 "Hg
Temperature: 27 °C		Dew Point: 23 °C		Weather Conditions at Accident Site: Visual Conditions	
Wind Direction: 140		Wind Speed: 5		Wind Gusts:	
Visibility (RVR): Ft.		Visibility (RVV) SM			
Precip and/or Obscuration:					

Accident Information		
Aircraft Damage: Substantial	Aircraft Fire: Ground	Aircraft Explosion

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL	
First Pilot	1				1	
Second Pilot	1				1	
Student Pilot						
Flight Instructor						
Check Pilot						
Flight Engineer						
Cabin Attendants						
Other Crew						
Passengers	1				1	
- TOTAL ABOARD -	3				3	
Other Ground						
- GRAND TOTAL -	3				3	

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Administrative Information		
Investigator-In-Charge (IIC) Daniel Baker		
Additional Persons Participating in This Accident/Incident Investigation: Michael Kout FAA Oklahoma City, OK Steve Miller Cessna Aircraft Company Wichita, KS Rodney Martinez Teledyne Continental Motors Mobile, AL		
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